

# Climate Services

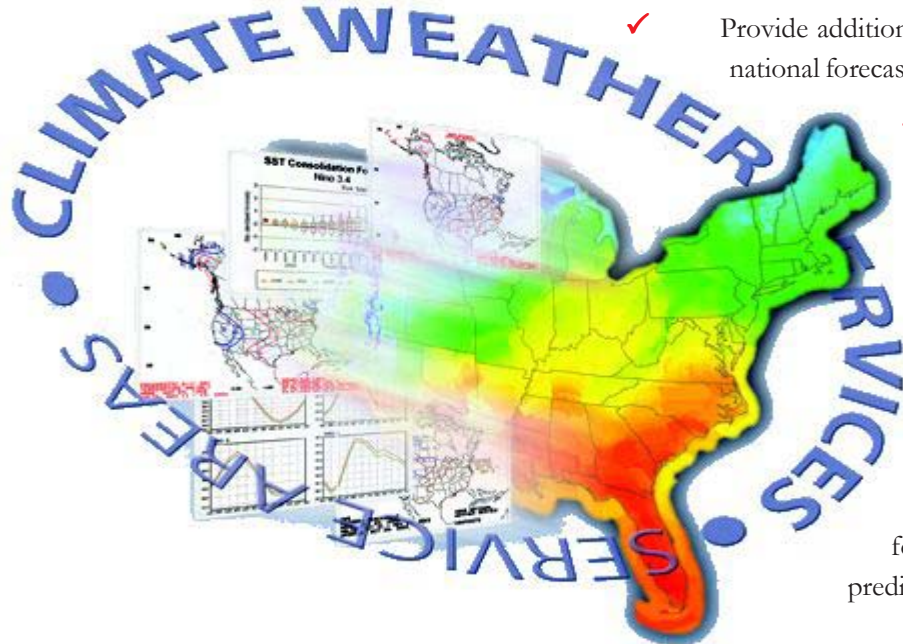
## Vision

To provide resources and direction to ensure NWS climate services are easily accessible, well understood, optimally used, and satisfy customer needs.

## Concept of Operations

OCWWS sets policy and requirements, secures and allocates resources, and acts as the national coordinator for NWS regional and local climate services. Climate services include real time monitoring, forecasting products, models and technology, observations, and customer outreach and education. For more information go to <http://www.nws.noaa.gov/om/csd>.

## Customer and Partner Requirements



- ✓ Provide additional regional/local detail to national forecasts.

- ✓ Ensure the time of issuance of Climate Prediction Center (CPC) products favor U.S. equity and commodity market interests at <http://www.cpc.ncep.noaa.gov/products/forecasts>.

- ✓ Provide climate forecasts based on ensemble prediction techniques.

- ✓ Provide verification for all forecast products.
- ✓ Make tools and data used in forecast development publicly available.
- ✓ Partner with local expertise for development and delivery of products and for customer/stakeholder interaction.
- ✓ Tailor forecasts and guidance to varying sophistication of constituent audience.
- ✓ Ensure data continuity principles are followed in the management of surface and upper air data.
- ✓ Strengthen climate services partnerships to leverage existing infrastructure for delivery and development of products.
- ✓ Expand climate training availability to local customers.
- ✓ Support Department of Energy (DOE) Energy Information Agency's fuel cost analysis with CPC heating degree day outlooks.

## Product or Service Change

- ✓ Disaggregate seasonal forecasts into monthly forecasts in a consistent manner, as well as provide both low and high frequency forecasts.
- ✓ Provide user access to digital guidance material.
- ✓ Improve the Drought Outlook and Drought Monitor by including both short-term and long-term components. Justify the issuance of the Outlook through routine verification. Product is

posted at [http://www.cpc.ncep.noaa.gov/products\\_expert\\_assessment/drought\\_assessment.html](http://www.cpc.ncep.noaa.gov/products_expert_assessment/drought_assessment.html).

- ✓ Convert the format of seasonal/monthly forecasts to one which displays total probability (instead of probability anomaly) to maintain consistency among CPC forecast products.
- ✓ Improve global precipitation analyses to include operational near real-time analyses of precipitation every half hour at a spatial scale of 8 km.
- ✓ Improve analyses of U.S. temperature departures from normal in support of realtime monitoring and forecast verification.

## Milestones by Quarter

### 1st Quarter

- Produce experimental CPC heating degree day outlooks to support DOE or Energy Information Agency (EIA) needs for use in their winter season U.S. household fuel cost outlook forecasts.  
(Milestone met, 1st quarter)

### 2nd Quarter

- Develop new training module on the importance of accurate, consistent surface climate observations and make it available on the web.
- Incorporate the Climate Diagnostics Center's (CDC's) Office of Oceanic and Atmospheric's Research (OAR) experimental digital calibrated forecast tool into 6-10 day and Week-2 forecast operations. The tool replaces a graphic only tool prior to operational implementation by the

Environmental Modeling Center (EMC), NCEP Central Operations (NCO) and CDC.

- Develop a climate multi-model ensemble tool to maximize seasonal forecast skill with International Research Institute for Climate Prediction (IRICP).
- Publish the NOAA ElNiño/La Niña index and definitions in the World Meteorological Organization (WMO) World Climate News.

### 3rd Quarter

- Co-sponsor NOAA weather and climate data users' workshop with the NCDC.
- Implement a common template for climate data throughout NWS web sites.
- Solicit customer feedback on experimental Eastern Pacific Hurricane Outlook product.
- Solicit customer feedback on experimental Objective Blends of Drought Indicators for Contiguous U.S.
- Solicit customer feedback on experimental Puerto Rico and U.S. Virgin Islands Rainfall Outlook product.
- Provide a written post-mortem for each bimonthly lead seasonal outlook to include verification of the outlook, discussion of physical causes evaluation of tools used.
- Evaluate the potential and accuracy for using high resolution gridded daily temperature fields in energy sector degree-day products.

## GPRA Performance Measure

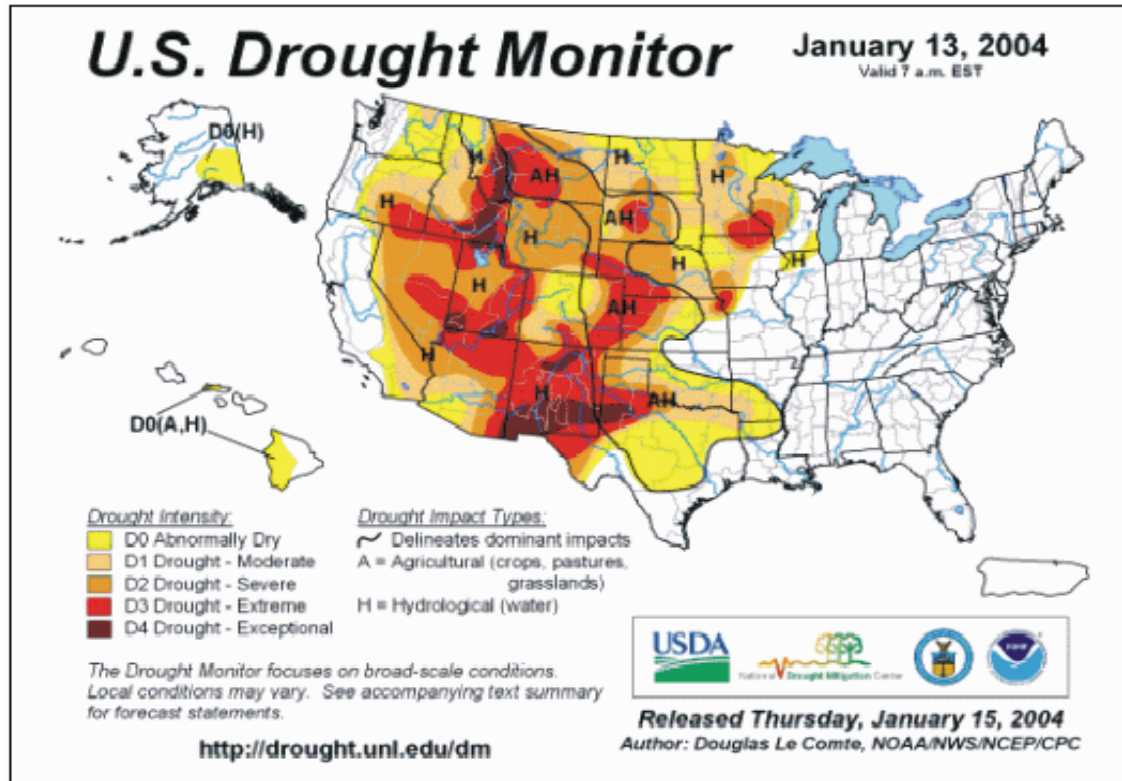
GPRA Goal	Unit of Measure	1998 - 2002 Baseline	2003	2004
Improve U.S. Seasonal Forecast Skill	Heidke Skill Score *	20	20	21

\* The Heidke Skill Score has a value of 100 when all forecasts are correct and has a value of zero when the number correct is equal to the expected number correct by a random forecast.

- Implement full access to European Center for Medium-Range Weather Forecasts 1 degree x 1 degree ensemble data (12 hourly, twice per day, out to 240 hours).
- Convert ocean data streams for marine and climate forecasting to a system based on the binary universal format for the representation of meteorological data (BUFR) and interact with community users.

#### 4th Quarter

- Conduct the North American Monsoon Experiment. For more information visit: <http://www.joss.ucar.edu/name/>
- Operationalize the zero-lead version of the monthly forecast including verification.
- Conduct climate prediction workshop at annual meeting of the American Association of State Climatologists (AASC).
- Conduct a climate prediction terminology workshop.
- Work with WMO to get universal acceptance of a continuous scale for El Niño and La Niña and widespread recognition that definitions adopted by NOAA are appropriate for monitoring and prediction of ENSO impacts in North America.
- Implement the zero lead version of the monthly forecast including verification.
- Participate in a snowfall data workshop with NCDC for the media and customers.
- Coordinate and implement the North American Monsoon Experiment 2004 field campaign.
- Implement advanced coupled atmosphere-ocean forecast system for monthly to Seasonal/ Interannual forecasts and upgrade Seasonal Forecast Model (SFM).
- Implement CDC ensemble Week 2 forecast system.



NOAA's Climate Prediction Center (CPC) and the National Climatic Data Center (NCDC), the U.S. Department of Agriculture, and the National Drought Mitigation Center (NDMC) jointly issue this weekly product at <http://www.cpc.ncep.noaa.gov/>

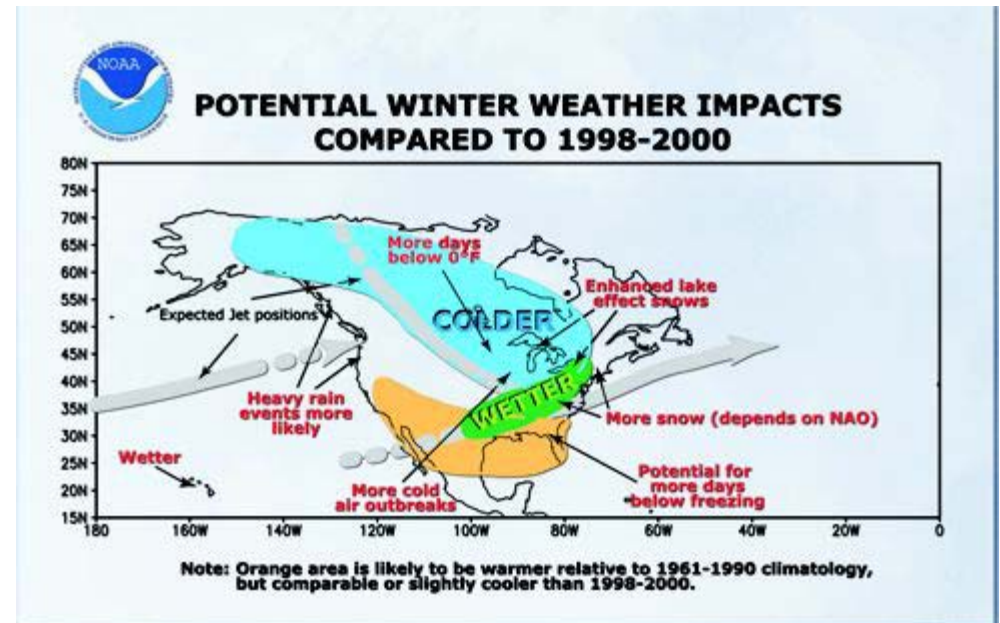
- Test dynamical seasonal prediction with alternate Sea Surface Temperature forecasts.
- Develop prototype global land data assimilation systems and test impact on seasonal precipitation and temperature forecast skill and use for the Drought Monitor.

## Link to Science and Technology Infusion Plan

- ✓ Achieve temporal understanding of North American Monsoon System.
- ✓ Improve atmosphere, ocean, and land data assimilation systems to provide more accurate initial conditions of these earth system components for climate prediction models.
- ✓ Improve week-2 forecasts through successful inclusion in dynamical and statistical models of influences of the Madden-Julian Oscillation (MJO) and weather regime breaks.

## Science and Technology Requirements

- ✓ Implement ASOS V2.8 software to remove false precipitation reporting from ASOS sites.
- ✓ Investigate feasibility of automated snowfall reporting.
- ✓ As a companion to improving existing national and global atmospheric and ocean data assimilation



*Potential 2000-2001 winter weather impacts compared to 1998-2000*

systems, develop and demonstrate national and global land data assimilation systems to provide land state conditions for climate prediction models and drought monitors and outlooks.

## Training

The Climate Services Professional Development Series (PDS) for NWS climate personnel will offer the following new training initiatives in 2004:

- ✓ Two sessions of residence training on climate variability and change, the latest developments in climate analysis and prediction, (including CPC operations) and methods for documenting and forecasting local climate fluctuations.



- ✓ New web-based training modules (webcasts) including topics on the ENSO Cycle, mechanisms producing climate variability, causes and predictions of drought, and climate change.
- ✓ Online training on 8- to 14-day forecasts, monthly and seasonal outlooks, local climate products, and climate observations.
- ✓ Teletraining sessions on NOAA Hurricane Outlooks. Training materials are available at <http://www.nwstc.noaa.gov/nwstrn/d.ntp/meteor/clipds.html>.

## Outreach

- ✓ Conduct Climate Prediction Applications Science Workshop for researchers and developers of applications of climate forecasts: <http://www.nws.noaa.gov/om/csd/workshop>.
- ✓ Assist the NCDC in organizing a NOAA climate and weather data users' conference: <http://lwf.ncdc.noaa.gov/oa/ncdc.html>.
- ✓ Conduct climate prediction workshop at annual meeting of the AASC: <http://lwf.ncdc.noaa.gov/oa/climate/aasc.html>.
- ✓ Conduct a climate prediction terminology workshop for broadcasters and media at the annual NWA meeting.
- ✓ Collaborate with the Western Governors, the Interim National Drought Council, the Regional Climate Centers, and the State Climatologists.

- ✓ Work with NWS regions to develop a uniform climate services web presence.

## Dissemination

All products, experimental and official, are on the Internet. Official products are also available on secured, commissioned NWS dissemination systems.

## Verification

Begin developing CPC verification program for complete suite of forecast products.

## Regional Initiatives

- ✓ Continue development of Regional Climate Service programs.
- ✓ Improve collaborative efforts by holding sub-regional meetings with state climatologists, Regional Climate Centers (RCC) and appropriate WFOs, RFCs, and other partners.
- ✓ Collaborate across regions to develop a climate services web presence.
- ✓ Focus on training efforts for Central Region Climate Service focal points.

## Contact Information

Bob Livezey, Chief, Climate Services Division,  
301-713-1970, ext. 182, [robert.e.livezey@noaa.gov](mailto:robert.e.livezey@noaa.gov).